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PALEONTOLOGY.—*A fossil member of the family Pegididae*.¹
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Heron-Allen and Earland have recently described several species belonging to four new genera, and all included in a new family which they have called Pegididae.² The species present some very unusual forms and are from shallow tropical waters. These authors make the following note. "The wide distribution of the family in tropical seas would appear to connote a prolonged ancestry. Geological records at present give no evidence on this point so far as our own information goes. It is possible that early stages of the family's evolution may yet be found in tropical deposits, but, on the other hand, it must be recognized that coral sands and gravels such as the family now favours do not readily lend themselves to fossilisation."³

In view of this note, it is interesting to record a fossil species. One of the best known later Tertiary faunas which has essentially a shallow-water tropical character is that described from Kostej, Banat, Hungary, by Karrer.⁴ This fauna contains many Miliolidae, including *Articulina* and *Hauerina*, with *Peneroplis* and *Spirolina* together with other forms of generally shallow-water tropical relationships. A considerable amount of material from Kostej in the writers possession was searched, with the result that a species of *Pegidia* was found, the first fossil record for the family. It is here figured and described.

Pegidia karreriana Cushman, n. sp.

Figs. 1 a-c

Test free, unequally biconvex, dorsal side more convex than the ventral; three chambers visible from the surface forming an irregular spire, earlier

¹ Received February 7, 1929.

² *On the Pegididae, a new family of Foraminifera*. Journ. Roy. Micr. Soc. **1898**: 283-299. pls. 1-3, 1 text fig.

³ Op. cit., p. 288.

⁴ *Die miocene Foraminiferen-fauna von Kostej im Banat*. Sitz. Akad. Wiss. Wien. **58**(1): 111-193. pls. 1-5. 1868.

chambers concealed by these three later ones, slightly inflated, fairly distinct from the ventral side, less so from the dorsal side except when wet; sutures not well marked, on the ventral side fairly distinct, on the dorsal side the suture between the last-formed chamber and the two preceding marked by a raised ridge; wall thick, on the ventral side smooth, on the dorsal side ornamented by a series of irregular knobs; apertures consisting of a series of rounded pores along the region of the sutural line on the ventral side of the test.

Diameter 0.40 mm.; height 0.32 mm.

Holotype (Cushman Coll. No. 10,244) from the Miocene, Kostej, Banat region of Hungary.

At first glance, the surface resembles that of *Sphaeridia papillata* Heron-Allen and Earland, but the structure places it in *Pegidia*. Of the species of *Pegidia*, it is nearest to *P. pulvillus* Heron-Allen and Earland, but the surface is more coarsely ornamented and the biconvex form of the fossil species more

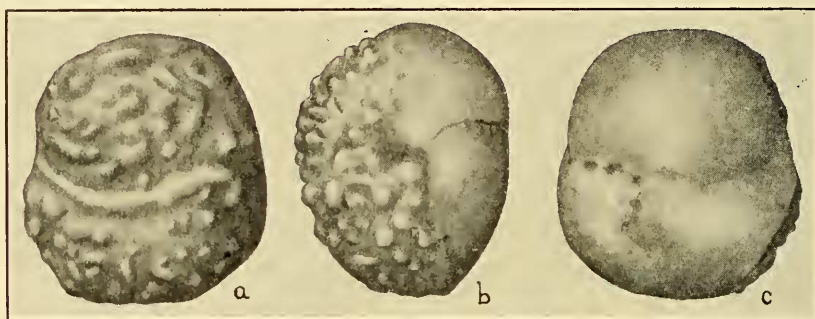


Figure 1.—*Pegidia karreriana* Cushman, n. sp., $\times 90$. a, dorsal view; b, peripheral view; c, ventral view.

nearly symmetrical than in the recent one. *P. pulvillus* is described from DISCOVERY Station 283, off Annobon Island, Gulf of Guinea, 18–30 meters, from coral sand.

At first, it was thought that "*Discorbina turris* Karrer" described from Kostej might be the early stage of this species, but "*D. turris*" was found in the material and seems to be quite different with its ornamented ventral side and larger number of chambers.

This family contains some very queer forms and they appear to be exceedingly rare. They seem to have been derived from such genera as *Eponides*, *Lamarckina* or forms of *Discorbis* by a greater involution of the chambers. The development of a peculiar thickened plate which is finally perforated to form the apertures recalls somewhat the plate-like structure seen in *Cancris* and *Baggina*, the latter genus also becoming strongly involute. The peculiar perforated area of

Cancris lateralis (*Pulvinulina lateralis*) may be noted in this connection. The Pegididae are very closely related to this particular branch of the Rotalidae, but the relationship to the Globigerinidae mentioned by Heron-Allen and Earland seems much more remote. It is true that *Candeina* has rows of pores along the sutures, but it is not through a special plate as in these groups. The Pegididae have evidently become specialized in another direction, and instead of becoming thin, large-apertured, with delicate spines and fitted for pelagic life, have adopted a very heavy, thick test, with a reduction of the aperture to a minimum, adapting themselves thus to the rough treatment received in rather swift currents and coarse bottom sediments.

The genus *Physalidea* with two species, each described from single specimens, needs more material to show its exact relationship to the other genera included in the Pegididae.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

THE ANTHROPOLOGICAL SOCIETY

On February 21, 1928, Mr. O. F. Cook, of the United States Department of Agriculture, addressed the Society on the subject: *Peru as a primitive center of agriculture*. The ancient Peruvians may be said to have attained the highest development of the art of agriculture, in their system of terracing and artificial placement of the soil. The cost in labor was enormous, but the improvements were permanent. The fertility of the soil was not lost by erosion, and may even have increased with the lapse of time. The terraced lands of the valleys of the eastern Andes undoubtedly have been cultivated continuously for many centuries and still are highly productive. The very specialized forms of agriculture and attendant arts in Peru indicate a very long period of development, and the indigenous character of the development is shown by facts of domestication.

The agriculture of the table-lands certainly was indigenous, since it was based entirely on the domestication of endemic high-altitude plants and animals, but there is nothing to indicate that the agriculture of the tropical valleys was derived from other regions. Primitive people who took refuge in these narrow, shut-in valleys of the eastern slopes of the Andes were under the greatest pressure to adopt a settled existence and to make every possible use of any local plants that could furnish food. The textile arts were carried to high degrees of perfection with cotton and other plant fibers, and with the wool of llamas, alpacas and vicuñas. As the higher elevations were attained, accurate knowledge of the motions of the sun became necessary, to determine the season for planting crops. The series of plant and animal domestications covered the entire range of habitable conditions, from the tropical lowlands, through the temperate valleys to the arctic climate of the high plateaus, where agriculture was carried above 14,000 feet.